An Essay
on
Endocarditis

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Endocarditis

The diseases that involve the vital organs are necessarily the most perilous, and should receive our most careful investigation. The proper performance of their functions, is essential to the continuance of health. The heart is eminently a vital organ, and a long continued interruption of its harmonious action, produces changes that are incompatable with life. Either of the tissues that enter into its composition may become the seat of inflamation. I shall endeavor to discribe some

of the most important immediate lesions that are induced by inflamation in the endocardial membrane, and to consider the various methods of diagnosis.

Endocarditis was not fully recognized and discribed until a comparatively recent date. It seems remarkable that a disease, which observation has shown not to occur infrequently, should have remained so long enshrouded in darkness. A knowledge of its complication with other inflamatory diseases, and its immediate influence in producing valvular lesions invest it with a special

importance. It does not immediately compromise the life of the patient. Yet the immense suffering it generally produces, by causing structural changes, renders its early removal of the highest moment.

By successful application of physical diagnosis enables us to detect its invasion, and the scientific principals of Homoopathy place at our command the means of combating successfully this otherwise formidable affection

That we may appreciate and determine the changes produced in the Endocardial Membrane by disease, it is

essential to understand the normal condition. The Endocardium is a transparent membrane very delicate in its structure, its free surface is highly polished and glistening, its attached surface is united to the subjacent muscular and tendinous structure by fine areola tissue. It consists of a layer of epithelium, which invests a fibrous tissue, between this and the muscular fiber there is a layer of elastic cellular tissue that contains the blood vessels, and through them the nutrition of the surface lamina is effected in disease, as well as by the direct influence of the blood contained in the cavities.

Its natural color in health is a palish white; this undergoes certain pathological alterations during the progress of inflamation, and it is important that this condition should not be confounded with the reddening produced by the imbibition of blood after death.

The Endocardium is thicker in the left cavities of the heart, and thickest opposite the auricular ventricular and arterial orifices. It is in these positions that it becomes unusually thick and rough during the progress of inflamation.

Endocarditis is generally limited to the left cavities; in fact

it is seldom found existing in the right cavities, except as a complication. All parts of the membrane are not equally subject to disease. The portion covering the valves, and lining the orifices is particularly prone to become affected by inflamation.

The membrane in these situations is more directly exposed to the action of the blood currents, and the constant motion and tension of the valvular portions, at each diastole and systole, would seem to favor this circumstance. Fibrinous tissue more frequently becomes the seat of inflamation than any other, and as the membrane in

these localities is underlaid with more fibrous tissue than elsewhere, may account for this fact.

Opportunities for inspecting the morbid appearances during the progress of endocarditis are not frequent; since it does not usually produce death immediately.

The anatomical changes produced in this Membrane by inflamation are very distinctive. The smooth, transparent, polished appearance which characterizes it in health, assumes a rough, opague, and velvity form. The areolar becomes brittle and is easily detached. The usual products of inflamation

also manifest themselves, and we find morbid deposits collected upon various portions of the membrane. These are mainly derived from two sources, the exudation of lymph, as in serous inflamations, and the coagulation of the fibrine of the blood as it passes over the roughened surface. In the former case it is derived from the areolar tissue beneath the Endocardium, in the latter from the circulation direct. The formation of these excrescences has received considerable attention during the past few years. There has been much discussion in regard to the extent, and frequency in which each of these sources contribute

to produce their formation. It seems proper to consider each as contributing different processes in different cases.

These formations are found to exist most frequently upon the valves and orifices of the left side of the heart. They often assume the form of granular masses, varying in size from a millet seed to that of pea, or even larger. These are not unfrequently insufficiently attached to resist the current of the blood; and they become detached, and are propelled onward by the circulation until they arrive at an arterial trunk too

small for their transmission. They are here arrested, and obstruct the passage of blood beyond this point.

These detached vegetations have received the name of emboli, and were first described by Virchow.

These migratory plugs may obstruct an artery without producing any serious consequences, the collateral circulation performing the function of nutrition. They are, however, not unfrequently productive of serious disturbances. They may be carried to the brain, and obstruct some one of cerebral arteries. Their presence in this situation

may excite inflamation, and induce circumscribed softening. The occurance of paralysis has in this manner been accounted for in a large number of instances. It is not improbable that many of the singular brain disturbances could be traced to this cause. I have witnessed two such cases during the present season, one at the Pennsylvania Hospital, the other at Bellevue Hospital.

Should the embolus enter the descending aorta, it is liable to obstruct any of its secondary branches. Since the first description of this circumstance, a large number of cases of death have

been reported from the plugging of the renal, splenic, and iliac arteries.

The identity of these deposits with those existing in the heart from endocarditis, has been clearly demonstrated, and the fact that they are usually found in combination with vegatations upon the valves and orifices, leaves no doubt as to their origin.

The exudation of lymph is regarded as a positive proof of Endocarditis having existed, but the deposit of fibrin alone, has not equal significance, since it may occur in consequence of an excess of this constituent of the blood, or as the result of a pathological condition of

that fluid in which the fabric is not retained in its fluid form.

Valvular lesions are another highly interesting class of diseases most usually dependant upon Endocarditis. They include the various organic changes affecting either the valves or orifices of the heart. They are important inasmuch as they are the immediate cause of certain derangements of the central organ of Circulation, particularly that of Enlargement.

Physical diagnosis enable us to determine with considerable accuracy the existance of this lesion. It is accompanied with abnormal modifications of

the natural heart sounds, and by superadded sounds, distinguished as murmurs. It is an established fact that these lesions are generally situated in the left side of the heart; the reverse of which obtains in congenital Malformations. This shows that they are the product of disease. I shall limit the consideration of this subject to its immediate effects without entering upon the diagnosis. If we possess a knowledge of the principal cause and are able to treat that successfully, we shall perform our most important duty as physicians.

The immediate effect is witnessed in the circulation. It may be of such a character as to

interfere materially with the onward flow of blood. This result may be produced by the effusion of lymph from the endocardial membrane; which may cause the different segments of the valves to adhere to each other, or to the sides of the orifices; also by the hypertrophy of the fibrous tissue of the valves, which manifests itself in undulated masses, fringing their free extremities.

The valves may become diseased in such a manner as to prove inadequate to properly close the orifices, and consequently, they allow a regurgitation of the blood during the heart's

contraction. This is occasioned either by the perforation of the valves, or by their shortening. The latter is caused by atrophy or by calcarious deposit, the former by ulceration. Enlargement of the heart may generally be referred to one of these conditions.

I have endeavored briefly to consider some of the most important changes directly attributable to endocarditis. They are all incompatable with the continuance of health, and are attended with severe suffering. They terminate fatally at an earlier or later period. These changes are easily recognized when they become fully established, yet their

treatment is not then attended with certain success. It is necessary therefore that they should be anticipated by a careful attention to the first evidences of inflamation of the endocardeum. This unfortunately is very difficult, but we should always anticipate it in all inflamatory conditions of the system.

Endocarditis frequently exists in combination with acute articular rheumatism, and it has been thought by many distinguished observers, that it always attends such an attack. This kind may be extreme, yet is undoubtedly true that the pro-

portion of cases in which they are complicated is very large, especially in those under twenty five. Rheumatism has been denominated the forerunner of endocarditis. They may both be regarded the local expression of the same constitutional affection, and dependant upon the same causes for their origin. The similarity of the structure of the Endocardium and the serous Membranes may account for their becoming similarly affected under similar circumstances. In acute rheumatism there is a superabundance of fibrin in the circulation, and the Endocardiac Membrane

being inflamed effuses lymph which is not all washed away by the blood current, this becomes attached and produces a roughness that attracts the fibrin which coagulates, and thus we have formed the vegetations already discribed.

The complication of endocarditis with Albuminuria is a singular fact that is attracting the attention of medical men, (of the present time,) but I have not time to enter upon its consideration, & that I shall be compelled to pass it over with the diseases that have been found occasionally to coexist, and predispose to this affection.

The symptoms of endocarditis are not generally well defined during its active progress. This will appear evident when we remember its usual complication with acute rheumatism, whose severer symptoms submerge almost completely those of this affection. This fact might lead the unsuspecting to imagine no such trouble to exist, yet careful examination may elicit the presence of phenomena which would denote its presence.

Pain and palpitation are the most reliable symptoms, but they are not unfrequently absent. A feeling of uneasiness

is sometimes felt in the region of the heart, and it may be you will discover a dull or obtuse pain by calling the attention of the patient to it. Sensation of faintness or suffocation is observed. There is an excited action of the heart, and it may be accompanied with symptomatic fever. Our principal information is to be obtained from physical diagnosis.

The comparatively recent discovery of this valuable means of exploration of the thoracic diseases, may account for the failure of the earlier observers to detect, and distinguish the various cardiac diseases.

Inspection may afford some evidence in certain cases. The impulse may be too violent for the amount of febrile movement, but this may occur in functional disorders, and its application requires some discrimination. It is only valuable when associated with other evidences.

Percussion may elicit dullness over a larger space than natural. It is doubtful, however, whether this could be detected during the invasion of the disease. It will require repeated ~~examination~~ observation to make this means of investigation serviceable, since enlargement is very gradual in its development.

This is also an important diagnostic sign in pericarditis. And we must be confident that this does not coexist.

Auscultation affords the only positive proof of the existance of Endocarditis. There is a murmur developed during the systole of the heart action; it is soft, having the characteristic of a bellows murmur. It is not always heard at the commencement of the inflamation. The time of its appearance varies in different cases and it is of the highest importance to determine whether this murmur has previously existed. It is essential therefore that we

should be acquainted with the history of the patient, that we may ascertain if this be not a lesion depending upon a previous attack. This information is necessary to enable us to use this valuable symptom to advantage.

The development of this murmur during the progress of acute rheumatism, renders it almost certain that Endocardial inflamation has occured. This conclusion is rendered more certain if other symptoms such as increased febrile movement. Excited action of the heart, and pain in the precordial region, are found to precede or follow the murmur.

The murmur is referable to the mitral orifice, and may be heard with the greatest clearness near the apex of the heart. It continues during the progress of the disease, and it may ever afterward. This is not true of inorganic murmurs, as they subside very soon.

It frequently happens that Endocarditis precedes the attack of Rheumatism, and yet its mild invasion has not attracted attention, until the manifestation of the latter affection. This has induced some to infer that it always precedes an acute attack.

The ordinary practice of treating rheumatism with external applications is almost certain to induce this far more serious disease, and should be rigidly proscribed.

I have endeavored to mention the most important lesions that may manifest themselves if we are not careful to detect the invasion, and prevent the progress of Endocarditis We may hope with considerable degree of confidence to treat it successfully, if the golden moment is improved.

I shall not attempt to particularize the Symptoms that would call for the various

remedial agents that our
Science places at our com-
mand. They are numerous,
and should be familiar to
Every practitioner of medicine.
The same principle that gui-
des us elsewhere, will certainly
accomplish in this instance,
all that human aid can
effect. Let us then remember
our watchword, "Similia simili-
bus curantur" and leave the
result with Him, who doeth
all things well.